

627.8
P19d
no. 2

ALTGELD HALL STACKS

CITY OF NEW YORK
ADDITIONAL WATER SUPPLY
CATSKILL AQUEDUCT
INAUGURATION OF CONSTRUCTION
NEAR PEEKSKILL, N. Y.
JUNE 20, 1907

Board of Water Supply

J. EDWARD SIMMONS
CHARLES N. CHADWICK
CHARLES A. SHAW

Commissioners

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**JOHN AUGUSTUS
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SHACKELFORD OCKERSON**

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no. 2

COMMISSIONER CHADWICK

COMMISSIONER SIMMONS

COMMISSIONER SHAW

MAYOR McCLELLAN



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Inasmuch as the bill named the civic bodies from which the commissioners were to be selected, objection was raised on the ground that it was unconstitutional.

Accepting the amendment with the broadest and most statesmanlike conception of the great problem of the future water supply for New York City, Mayor McClellan, at the banquet tendered him by the Hamilton Club on Thursday evening, April 6, 1905, lifted the whole problem out of the plane of partisan politics into that of a business, non-partisan administration when he emphasized his position in the following statement:



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“I promise with all the sincerity that is in me that if the bill is amended giving to the Mayor absolute and unqualified power of appointment I shall immediately on the enactment of the bill call upon the Chamber of Commerce of New York, the Board of Fire Underwriters and the Manufacturers’ Association for a list of three names each, and from those names I shall appoint Commissioners, one from each list; and should any vacancies occur later during my administration, I shall fill those vacancies in the same manner I shall appoint the original commission. I want to make a precedent so strong and establish a tradition so binding that none of my successors can in any circumstances violate this tradition or precedent.”



THE bill became law, and on June 9, 1905, the Mayor, in accordance with his promise, appointed the Board of Water Supply.

To George B. McClellan, Mayor of The City of New York, belongs the honor of having secured the passage of this measure and the inauguration of the Catskill Aqueduct.



Catskill Watersheds and country traversed by Catskill Aqueduct, showing the route of the Aqueduct from Ashokan Reservoir to New York City.

Order of the Day

THURSDAY, JUNE TWENTIETH
NINETEEN HUNDRED AND SEVEN

- 9:00 Steamer "Albany" leaves Pier A, Battery, North River.
12:00 Luncheon on the steamer.
1:00 Conveyances leave Cold Spring for Place of Ceremonies.
1:30 Exercises :

Program

- | | |
|--------------------------------------|--|
| Song, "Star Spangled Banner," | B. W. S. Glee Club. |
| Invocation, | Archdeacon W. R. Thomas
of Hyde Park, New York. |
| Welcome and Address, | Hon. J. Edward Simmons,
Commissioner of the Board
of Water Supply. |
| Song, "America," | B. W. S. Glee Club. |
| Presentation of Spade, | Hon. Charles N. Chadwick,
Commissioner of the Board
of Water Supply. |
| Address and
Turning of First Sod, | Hon. George B. McClellan,
Mayor of The City of
New York. |
| Benediction Prayer, | Rt. Rev. M. J. Lavelle,
Vicar General of the
Diocese of New York. |
| Committee on Arrangements, | Hon. Charles A. Shaw,
Commissioner of the Board
of Water Supply. |
- 3:00 Steamer leaves for Storm King Crossing.
6:30 Due at Pier A, Battery, North River.

Board of Water Supply of The City of New York

CITY OFFICIALS CONNECTED WITH THE WORK

GEORGE B. McCLELLAN
Mayor of The City of New York

Board of Water Supply

Commissioners

J. EDWARD SIMMONS CHARLES N. CHADWICK CHARLES A. SHAW

THOMAS HASSETT, Secretary

J. WALDO SMITH, Chief Engineer

Consulting Engineers

JOHN R. FREEMAN WILLIAM H. BURR FREDERIC P. STEARNS

Department Engineers

ALFRED D. FLINN ROBERT RIDGWAY
CARLETON E. DAVIS MERRITT H. SMITH

Corporation Counsel

WILLIAM B. ELLISON

Assistants to the Corporation Counsel

GEORGE L. STERLING JOHN L. O'BRIEN

Board of Estimate and Apportionment

GEORGE B. McCLELLAN, Mayor HERMAN A. METZ, Comptroller

PATRICK F. McGOWAN JOHN F. AHEARN BIRD S. COLER

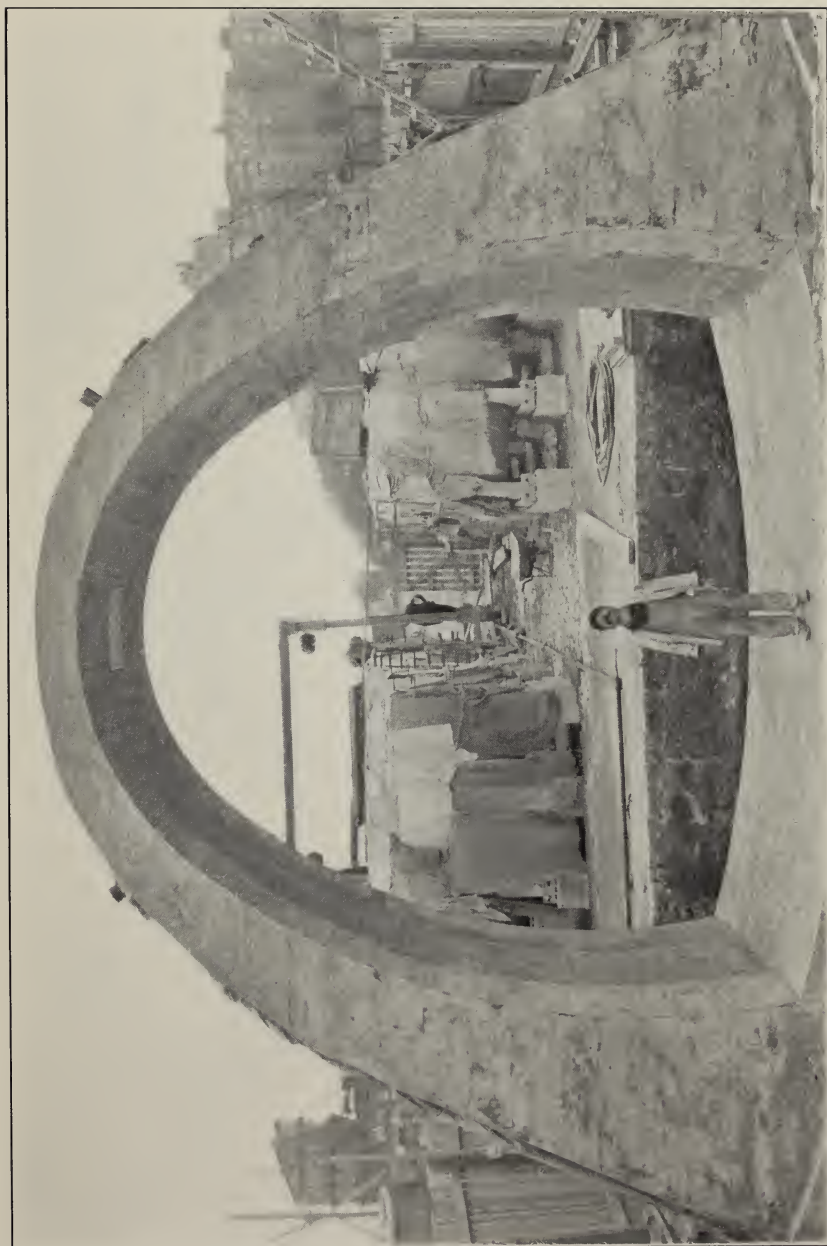
LOUIS F. HAFFEN JOSEPH BERMEL GEORGE CROMWELL

NELSON P. LEWIS, Chief Engineer JOSEPH HAAG, Secretary

Municipal Civil Service Commission

WILLIAM F. BAKER R. ROSS APPLETON ALFRED J. TALLEY

FRANK A. SPENCER, Secretary



CATSKILL AQUEDUCT. Full size concrete model of Aqueduct as it will be built in trench.

Chronology of Catskill Aqueduct

June 9, 1905—Hon. George B. McClellan, Mayor, appointed J. Edward Simmons, Charles N. Chadwick and Charles A. Shaw, Commissioners to constitute the Board of Water Supply of The City of New York.

June 20, 1905—Plan for organization of Engineering Bureau adopted.

July 7, 1905—John R. Freeman was appointed Consulting Engineer.

August 1, 1905—J. Waldo Smith, Chief Engineer, one Division Engineer and several members of Administration Bureau reported for duty.

August 8, 1905—William H. Burr and Frederic P. Stearns were appointed Consulting Engineers.

August 9, 1905—Board of Water Supply passed resolution directing general plan for securing an additional supply of water from the Catskill Mountain district, and directed Chief Engineer to submit plans, maps, and profiles.

October 9, 1905—Board of Water Supply made report to Board of Estimate and Apportionment, submitting scheme for obtaining water from Catskill sources, with map.

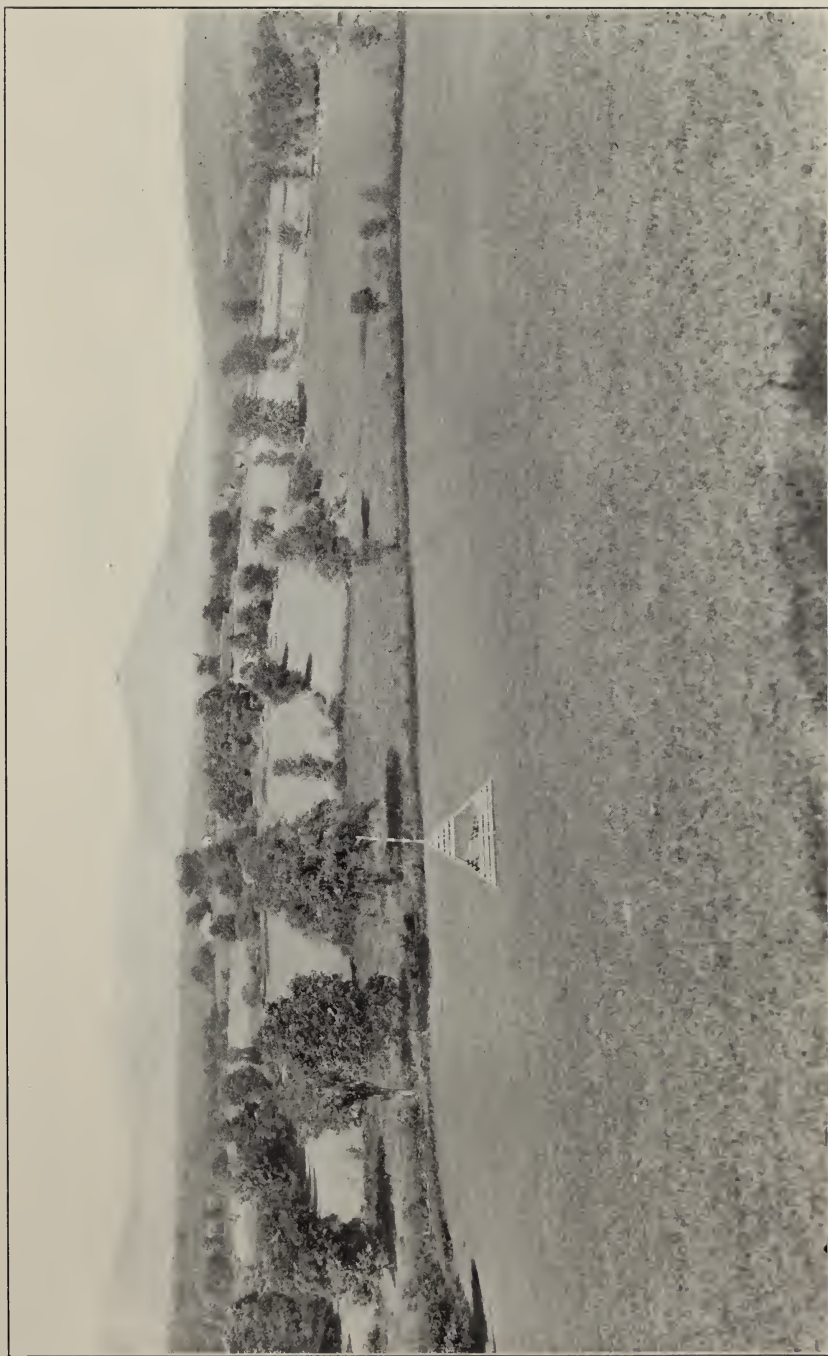
October 27, 1905—Report adopted unanimously by Board of Estimate and Apportionment.

November 3, 1905—Board of Water Supply filed application of The City of New York in office of State Water Supply Commission at Albany.

March 1, 1906—Contract No. 1, for preliminary surveys, signed.

May 18, 1906—Favorable decision by State Water Supply Commission.

April 10, 1907—First contract for construction, covering about 11 miles of the Catskill aqueduct, signed.



ASHOKAN RESERVOIR. View of the great basin, looking northeasterly toward Overlook Mountain. The houses in the center of picture are on the highest point to be flooded, 590 feet above sea level.

The Problem



IMMEDIATELY after appointment, the Board of Water Supply organized with J. Edward Simmons, as President, and Charles N. Chadwick, as Secretary. A city of four million inhabitants had practically reached the limits of its resources for water, and the Board was faced by a large and involved problem. Numerous administrations had contributed to its solution; report upon report had increased encyclopedic knowledge of the subject; a vast amount of wisdom had been evolved, but it remained to reduce that knowledge and wisdom to practice, and to secure continuity of plan and of administration in execution. The means were provided by Chapter 724 of the Laws of 1905. The task, then, for the Board of Water Supply, was the determination of sources of supply from which water was to be taken; the creation of a colossal organization to carry on the work; the location of its main office and field offices, and the thousand and one details involved in establishing that great business enterprise whose aim and end is to satisfy the need for water of the five Boroughs of Greater New York by the delivery of an additional 500 to 600 million gallons daily.



ASHOKAN RESERVOIR. Site of Olive Bridge Dam showing solid rock foundation in the gorge of Esopus Creek.

Organization of Forces

A plan of organization and procedure was adopted by which the forces of the Board were at the start divided into two bureaus, the Administration and the Engineering. Later a department was added to deal with damages and the acquirement of property by agreement.

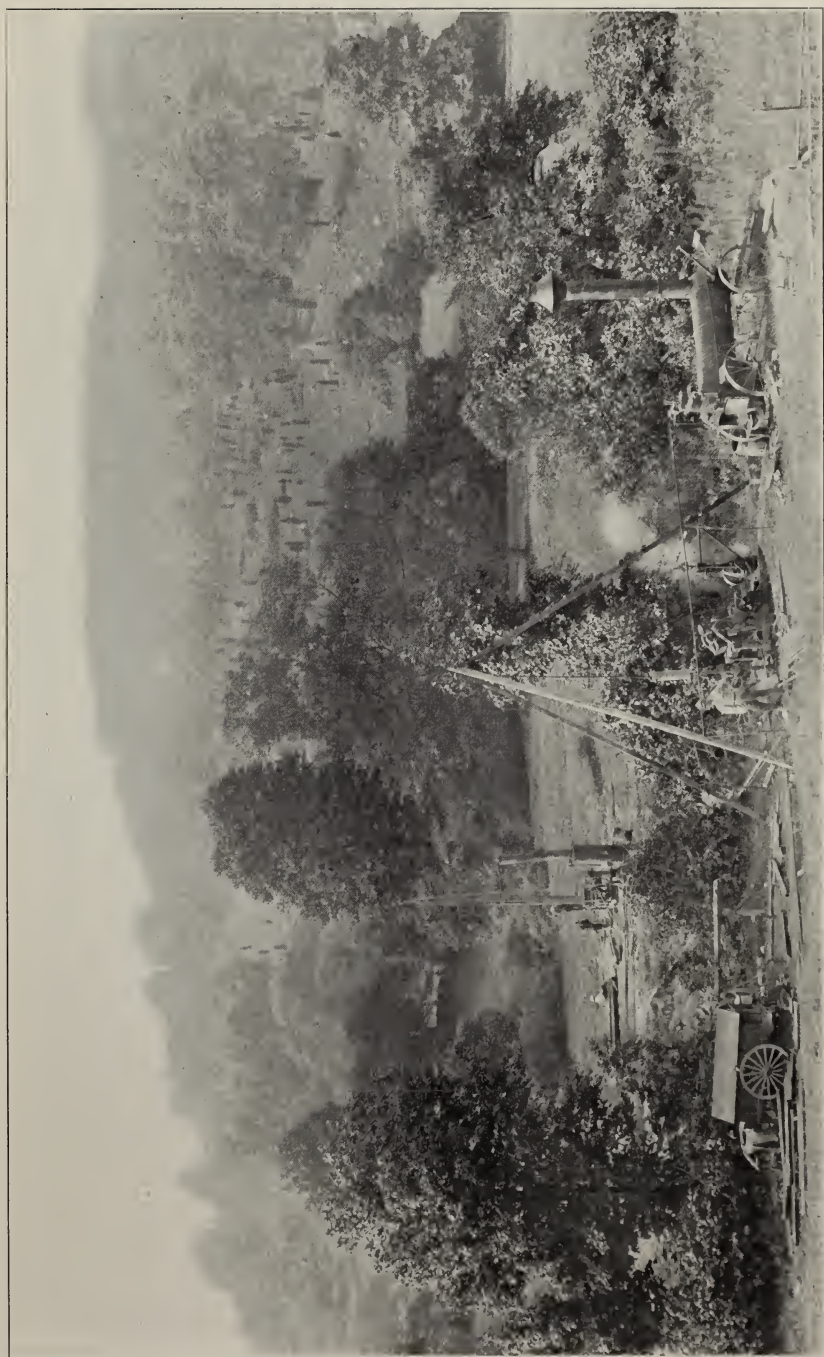
To provide for the proper classification of the expenditure of the enormous sum involved, and to properly account for every cent by means of a correct system of bookkeeping, was in itself no small task. The organization of the Administration Bureau has been so systematized that the Commissioners can know each day every detail and item of expense as the work increases and expands.

The scheme of organization of the Engineering Bureau comprises a Chief Engineer, three Consulting Engineers, and six great departments.

Headquarters Department has charge of design, the general administration of the Bureau, Civil Service matters, and distribution of water to the five Boroughs. Reservoir Department is charged with surveys and construction in the Catskill Mountain watersheds. To Northern Aqueduct Department is committed surveys and construction for the portion of the Catskill aqueduct between Ashokan reservoir and Croton watershed, with branch aqueducts from Rondout to Catskill creeks. Southern Aqueduct Department has charge of the remainder of Catskill aqueduct, and of reservoirs at Kensico and Hill View. Long Island Department is conducting surveys relating to the development of ground and surface waters in Suffolk County, so that this water may be utilized if present restrictions can be removed. Later a Filtration Department will be established to build a great filter plant near White Plains and have in charge works for the protection and improvement of the quality of the water.

Catskill Mountain Water System

The Catskill Mountain water system will be the most extensive ever undertaken by one municipality. From the far limits of the gathering grounds, some of the water will have to flow 130 miles to reach City Hall, New York, and 20 miles farther to the southern extremity of Staten Island. Four creeks, Esopus, Rondout, Schoharie and Catskill, will constitute the main sources of supply. The total area of all the watersheds is over 900 square miles, and their combined supply, when fully developed, will exceed 800 million gallons daily. Works now projected will have sufficient capacity to bring to the City each day not less than 500 million gallons.



CATSKILL AQUEDUCT. The beautiful Valley of Sprout Brook, which will be crossed by large steel pipes laid in trenches.

Principal Features

The main features are a principal impounding reservoir, the Ashokan, the Kensico storage reservoir, a filtration plant much larger than any yet built, Hill View distribution reservoir, and the Catskill aqueduct, about 80 miles in length.

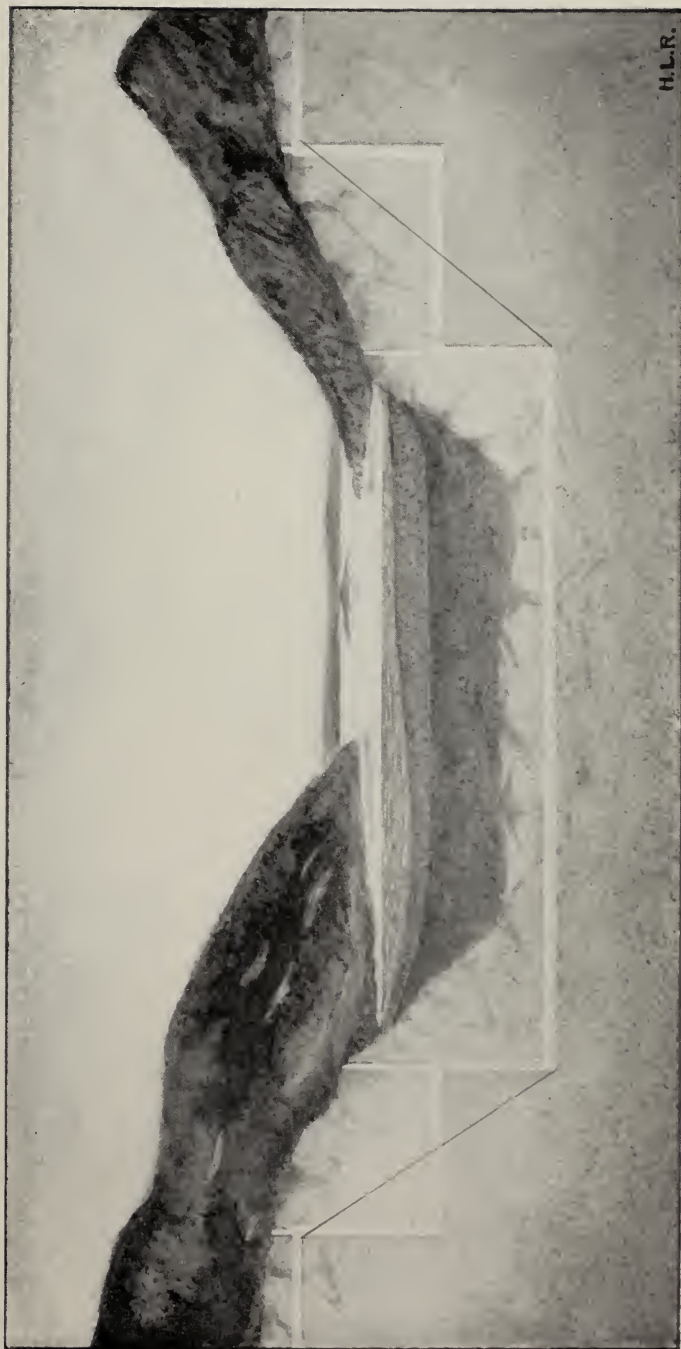
Olive Bridge dam, 220 feet high, across Esopus creek, will, with other dams and dikes, form Ashokan reservoir, 12 miles long and 2 miles wide, to impound 120 billion gallons. Besides the waters of the Esopus, this reservoir will receive those diverted from Schoharie creek by a ten-mile tunnel through the mountains, and from Catskill creek and adjacent small watersheds through another aqueduct.

Catskill aqueduct, supplied from Ashokan reservoir, will deliver the water, without pumping, to Hill View reservoir in Yonkers, high enough for gravity distribution throughout Greater New York.

Wherever the water flows at hydraulic grade, the aqueduct will be constructed of concrete, with a waterway of the shape shown. Where it is necessary to cross those deep glacial gorges barely indicated at present by the small channels of such streams as Rondout and Moodna creeks, tunnels will be driven in solid rock far below the surface of the ground and lined with thick concrete, within which the water will flow under pressure. At the northerly end of each pressure tunnel the water will drop down a deep shaft and at the southerly end will rise again in a similar shaft. The most difficult crossing anticipated is that of the Hudson at Storm King, where the river is 2,800 feet wide. While there are but 90 feet of water, solid rock is probably not encountered at a less depth than 600 feet. Hence each leg of the inverted siphon may reach a depth of over 1,000 feet, since the natural level of the water in the aqueduct here is about 400 feet above the river surface.

The City's Need of Water

The population of the Greater City to-day approximates 4,300,000. The total consumption of water is 500 million gallons per diem, of which the Croton system when completely developed in 1910 can be relied upon to furnish only 325,000,000. At the end of 1915, the population of Greater New York is estimated at 5,260,000 and its water consumption at 710 million gallons or 250 million above the present available supply. In 1930 the population will have increased to almost 7,000,000 and consumption to over 1,000 million gallons daily.



STORM KING MOUNTAIN

BREAKNECK MOUNTAIN

CATSKILL AQUEDUCT. STORM KING CROSSING OF HUDSON RIVER

Looking north, showing the shafts through which the water will descend on the west side and rise again on the east side of the river, after passing through a half-mile tunnel in solid rock about 700 feet below the river's surface. The great distance from water surface to bed rock and the silt and sand in the river bottom overlying it are indicated.

Cost of the Works

The cost of the Catskill works included in the present project, for supplying soft filtered water at high pressure by gravity to all Boroughs is estimated at \$162,000,000. Great as will be the cost of these works, it will not be a heavy burden per capita. By the time the City is enjoying the full benefit of the new supplies, its population will probably have reached 7,000,000. Twenty-five yearly payments of 90 cents per person would defray the cost of building these great works to provide water for private, manufacturing and public uses at the rate of 150 gallons for each person, each day. But experience has shown that the water works of large cities, if reasonable rates are charged for water, have sufficient earning capacity to pay for their operation and the investment for construction, so that the City practically lends only its credit for the construction of the work.

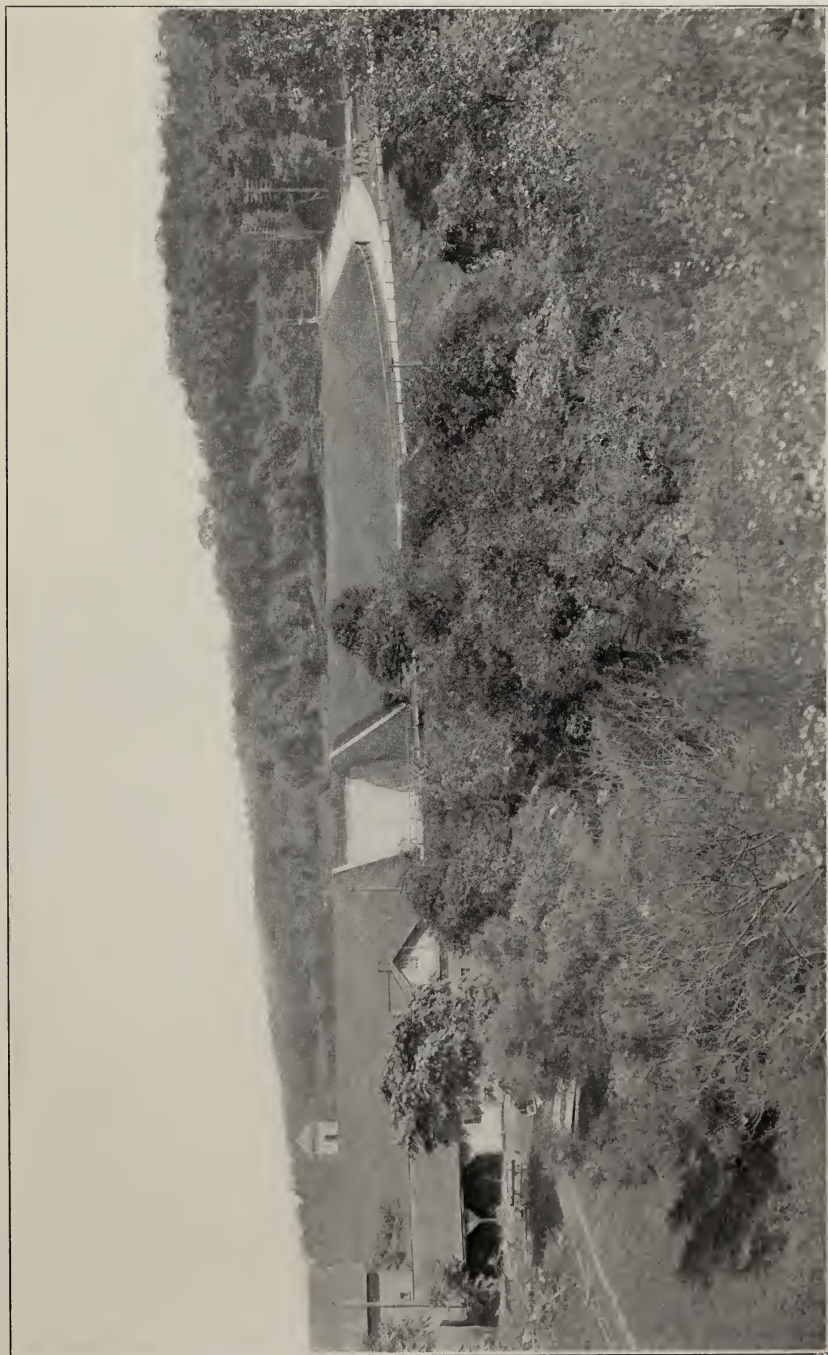
The cost of the Croton system, supplying 325 million gallons of unfiltered water to the Borough of Manhattan and part of The Bronx, will approximate \$90,000,000.

Progress to Date

Hundreds of miles of topographic and property surveys have been made, and innumerable holes drilled into the earth and solid rock to determine the best and most economical locations for the great reservoirs, dams and aqueducts. Samples of soil, sand, gravel and stone, as well as of rock by core borings, have been obtained. The data thus secured has been passed upon by the most distinguished experts of the country—engineers, geologists, chemists, specialists in aeration, in filtration and in the preparation of reservoirs; also by experts in mechanical construction and in the location of railroads and highways.

The acquiring of property, involving the removal of villages, churches, schools and homes, the relocation of highways and railroads and the investigation of thousands of titles, is still another part of the great problem which is being worked out through agreement with owners and by condemnation proceedings under Commissioners of Appraisal already appointed.

Thus the stage of organization, surveys and acquiring data is well advanced, and these inaugural ceremonies mark the beginning of systematized constructive work.

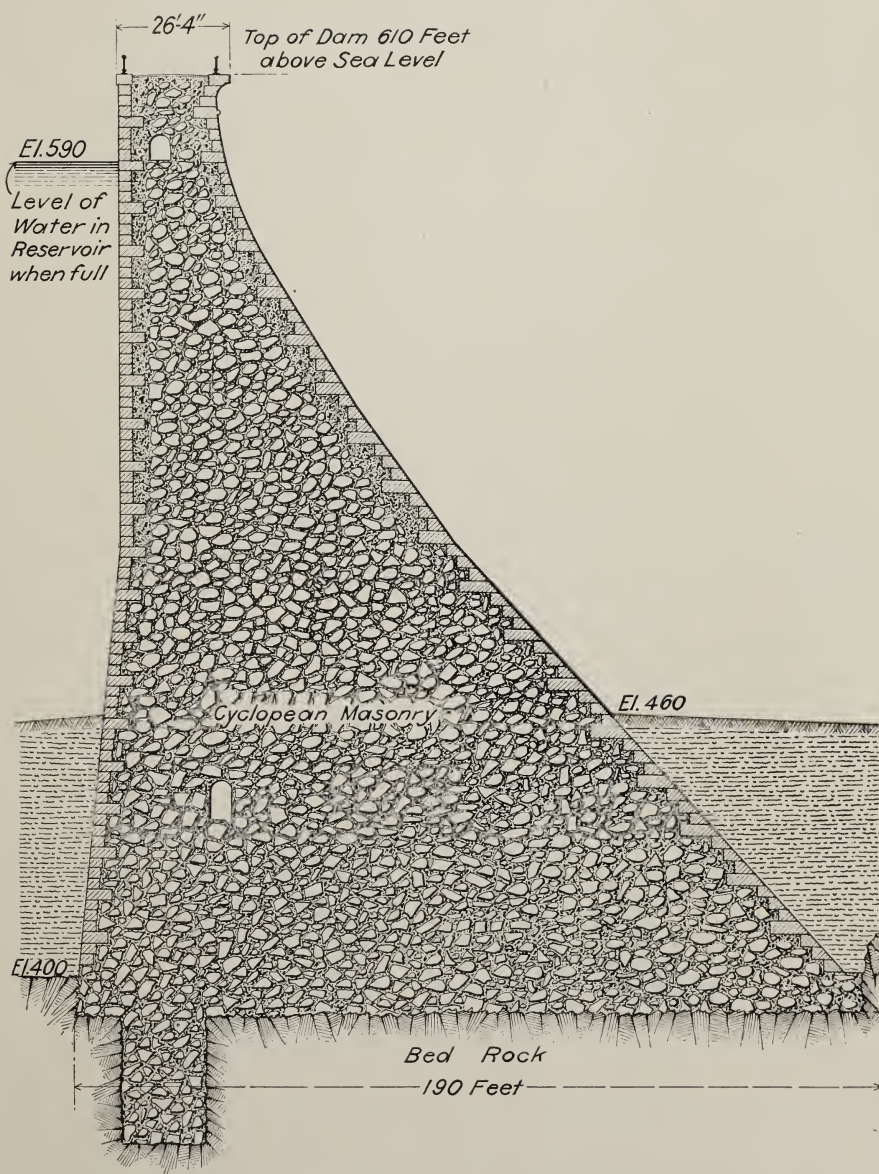


KENSICO RESERVOIR. A new dam will be built at this site which will raise the water level over 100 feet, completely submerging dam shown.

Conditions Needed for Success

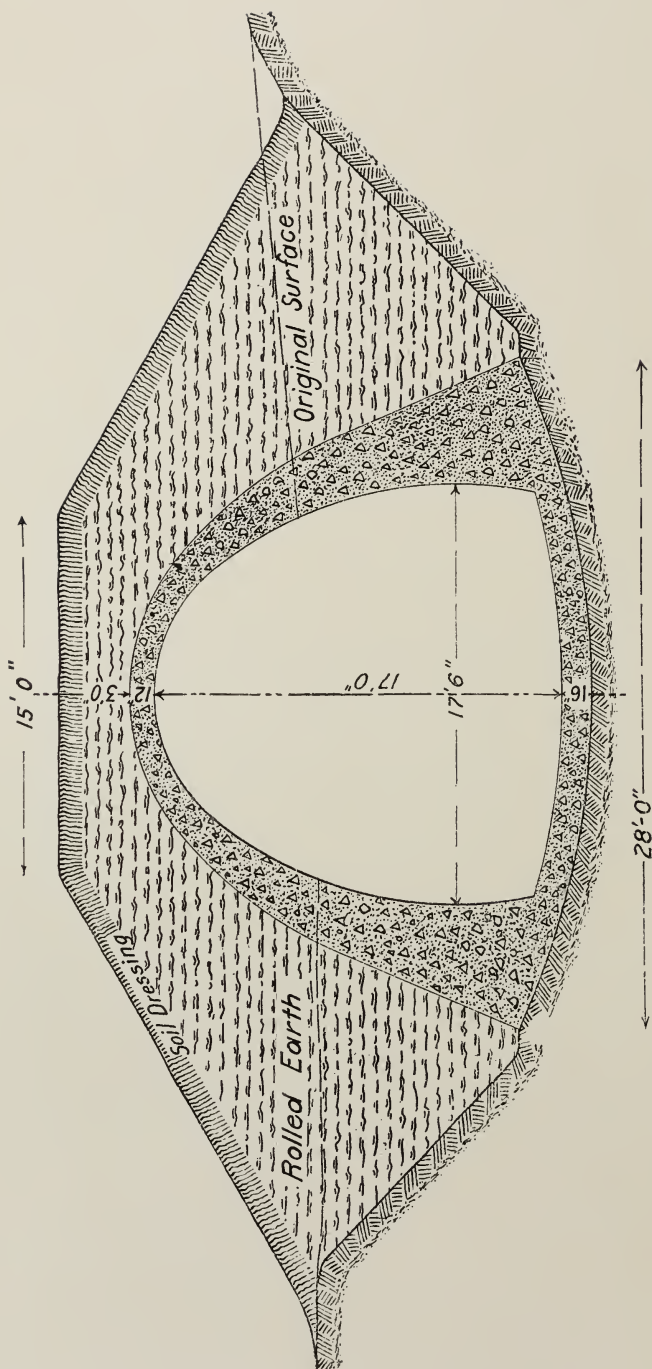


THE success of this work is conditioned upon the intelligent co-operation and systematic support of the Board of Water Supply by the Great Departments of The City of New York—the offices of the Mayor, Comptroller, and Corporation Counsel, the Board of Estimate and Apportionment, and the Municipal Civil Service Commission.

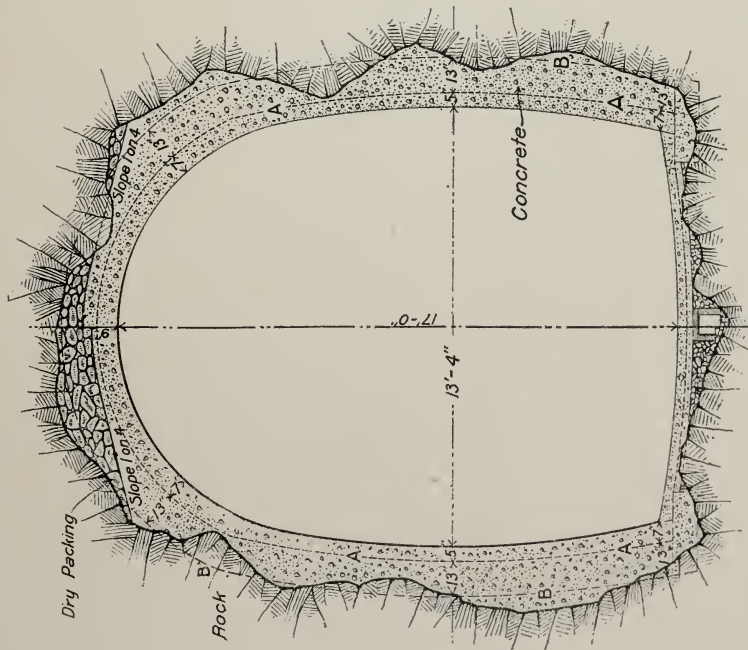


ASHOKAN RESERVOIR, OLIVE BRIDGE DAM.

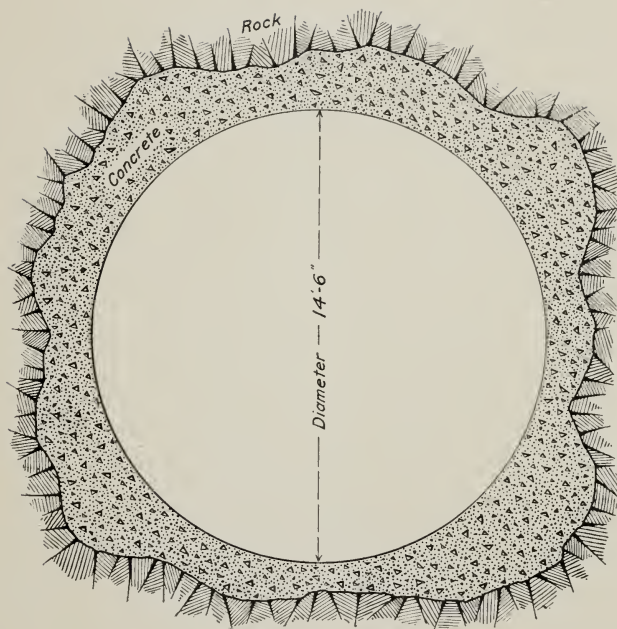
Section of masonry dam in the gorge of Esopus Creek, where it has its maximum height of about 220 feet, with foundation on bed rock.



CATSKILL AQUEDUCT. Ordinary construction of Aqueduct in earth trenches along hillsides, covered with earth embankment.

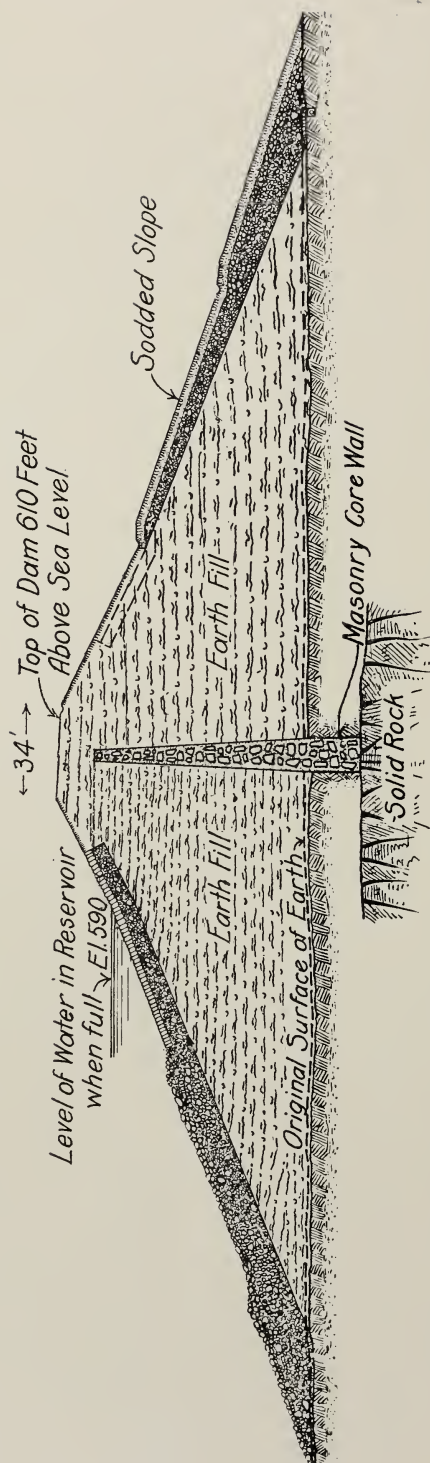


Section of tunnel in sound rock through which the water will flow without pressure at its natural grade.



Section of tunnel in solid rock far below ground surface or river bed, through which the water will flow under great pressure. This form of construction will be used for crossing deep valleys.

CATSKILL AQUEDUCT. TWO TYPES OF TUNNEL CONSTRUCTION



ASHOKAN RESERVOIR. Cross section of one of the large earth dams for closing the longer and shallower gaps in the rim of the basin.

The Ceremonies of Inauguration

In response to formal invitations, more than 360 guests of the Board of Water Supply boarded the steamer "Albany" of the Hudson River Day Line, at Pier A, North River, New York, on the morning of June 20, 1907. The steamer, appropriately decorated with the National and City flags and the ensigns of the Mayor and of the Board of Water Supply, cast off about 10:00 A. M., amidst the playing streams of municipal fire boats and salutations from other craft. The "Albany's" middle deck was hung with large photographs showing the sites of important parts of the Catskill water works; maps showing the locations of the works; and diagrams depicting the problems being solved, the City's urgent need of water, and the organization of the Board's forces. On the lower deck, tables were spread to accommodate the guests at luncheon during the noon hour. Fine weather contributed to the enjoyment of the sail up the scenic Hudson, and the landing at Cold Spring was made about 1:00 o'clock.

By automobiles and carriages the party was thence conveyed to the spot selected for the ceremonies, near Indian brook and Garrison road, in Phillipstown, Putnam county, about midway between the villages of Cold Spring and Garrison. This plot of ground was the first acquired by the Board of Water Supply, and was secured by purchase under direct agreement with the owner instead of by condemnation proceedings. This land was bought of Henry F. Newell, and had been in the possession of his family since 1864.

On the easterly side of Indian brook valley, where it slopes steeply toward the west, a few hundred feet from the highway, a speakers' stand, draped in the national colors, and benches for the guests had been built. Upon the speakers' stand were seated the Commissioners of the Board of Water Supply with their Chief and Consulting Engineers, Mayor McClellan, Comptroller Metz, Archdeacon W. R. Thomas, of Hyde Park, New York, The Right Reverend M. J. Lavelle, Vicar General of the Diocese of New York, and officials and guests. On the seats and grass before the speakers were gathered about 1000 persons, the party from New York City having been largely augmented by people from the surrounding towns and summer villas. At a signal from Commissioner Shaw, the national flag was unfurled from

Board of Water Supply of The City of New York

a flagstaff near the speakers' stand, while the Board of Water Supply Glee Club sang "The Star Spangled Banner." The programme of exercises, as printed on another page, was carried out. When the appropriate time had come, the Mayor descended from the speakers' stand, and, at a designated spot on the center line of the Catskill aqueduct, to be marked later by a bronze tablet, turned the first sod, proclaiming: "Now I, as Mayor, in the name of The People of The City of New York, do declare this work begun." The addresses are printed elsewhere in this pamphlet.

The spade presented by the Commissioners of the Board of Water Supply to the Mayor, as a souvenir of the inauguration of construction of the greatest system of municipal water works, was specially designed by Tiffany. Its mahogany handle was fashioned to represent a cross-section of the Catskill aqueduct, and its etched steel shank and blade were heavily mounted and inlaid with silver. It bore the following inscriptions:

"WITH THIS SPADE
THE FIRST SOD WAS TURNED
by
GEORGE B. McCLELLAN,
The Mayor."

"Presented to
GEORGE B. McCLELLAN
Mayor of The City of New York
by the
Commissioners of the Board of Water Supply,
J. Edward Simmons,
Charles N. Chadwick,
Charles A. Shaw,
At the Inauguration
of the
Construction of the Catskill Water Works,
On the line of the Aqueduct,
Near Peekskill, N. Y.,
June 20, 1907."



SPADE PRESENTED TO MAYOR McCLELLAN.

Board of Water Supply of The City of New York

When the Mayor had turned the sod with this spade and the benediction had been pronounced, the party from New York City returned in the automobiles and carriages to the steamer.

Upon re-embarkation, the "Albany" steamed up the Hudson, past Storm King, into Newburg bay, and, circling about, began the homeward voyage. This afforded the guests an opportunity to see the drilling machines anchored in the Hudson river, engaged upon explorations to determine the depth and character of the bed rock beneath the river, as well as views of the two exploration shafts being sunk, one on Storm King shore, and the other, on the easterly shore, at the foot of Breakneck mountain. Here it is expected that the aqueduct will cross the river in a deep tunnel in solid rock, with connecting tunnels through the mountains on either side. On the homeward sail a simple supper was served and the hours were enlivened by the songs of the Glee Club. A landing was made at the 129th street pier about 8:00 o'clock; another landing at 42d street, about 8:30, and the "Albany" put into Pier A about 9:00 o'clock. Thus ended the simple and dignified inaugural of one of the greatest municipal enterprises, "begun in honesty, and, God willing, completed in honesty".

Invocation.

ARCHDEACON W. R. THOMAS.



Direct us, O Lord, in all our doings, with Thy most gracious favor, and further us with Thy continual help; that in all our works begun, continued and ended in Thee, we may glorify Thy Holy Name, and, finally, by Thy mercy, obtain everlasting life; through Jesus Christ our Lord. Amen.



O Eternal God, without whom nothing is strong, nothing is holy, bless the constructive work here inaugurated this day. Be with those who design, and those who superintend so great an undertaking. Guard also the workmen that shall be employed thereon. Especially we invoke Thy guidance and blessing upon the Mayor of The City of New York, the Board of Water Supply, and the Municipal Departments co-operating.

We render thanks unto Thee, our Heavenly Father, for putting it into the minds of Thy children, thus to plan and begin a work that shall bring refreshment and strength to millions of Thy creatures, in the not distant future, and through successive generations.

As they drink from streams of the mountains, may they never grow unmindful of the Giver of all good, and of the River of the Water of Life, clear as crystal, proceeding out of the throne of God and of the Lamb.

For this and all Thy mercies, may Thy children, O God, carry grateful hearts, and show forth their thankfulness by honoring Thee, their Divine Benefactor, and by doing good and honest service to their fellow men in the varied walks of life and labor, all which we ask in the name and for the merit of Jesus Christ our Blessed Lord and Saviour. Amen.



ADDRESS

delivered by

J. EDWARD SIMMONS

President of the Board of Water Supply

FELLOW CITIZENS :

In behalf of the Board of Water Supply, I extend to you a cordial greeting and I bid you welcome to the ceremonies incident to "Turning the First Sod" by his Honor, the Mayor of The City of New York, which marks the beginning of the construction of the Catskill aqueduct.

Under the shadow of the mighty Storm King, and on the banks of a broad and beautiful river whose shores, highlands, and peaks serve to remind us of the heroic deeds of our Revolutionary patriots, we have assembled to celebrate an event full of joy, full of significance and promise to those who adequately appreciate the occasion.

We have come to assist at the beginning of a vast structure, a structure so vast that, by comparison, it will challenge the mightiest public undertakings of both ancient and modern times.

The works attributed to the mythical giants of the past were characterized by size and strength, and they invariably suggested force and might. On this spot we peacefully commence to-day a structure which, in size and strength, will far exceed the mythical proportions suggested by the works of the Cyclops of ancient story, whose massive walls will be dwarfed by comparison with the huge dam at Olive Bridge, which will rise a sheer two hundred and twenty feet from its base, and will enable the American engineers to laugh to scorn the historic proportions of the Babylonian wall of Semiramis.



WELCOME AND ADDRESS—COMMISSIONER SIMMONS.

Board of Water Supply of The City of New York

The great reservoirs and aqueducts of Rome have been the wonder of mankind through twenty centuries. Ashokan Reservoir—twelve miles long and two miles wide, with a water surface of ten thousand acres and a capacity of one hundred and twenty billion gallons—will exceed in size anything of its kind in the world's history. The Catskill aqueduct will be large enough to accommodate an ordinary railroad train and it will pale into insignificance the famous aqueducts of the Imperial City because it will carry thirty times as much water as all the aqueducts of Rome combined.

Modern imagination has often sought to picture the army of captives and slaves who were forced by fear of the lash to rear the huge Egyptian Pyramids. The Commissioners of the Board of Water Supply, assisted by more than half a hundred engineers and designers, and many more officers and officials, have framed the plan which will now direct a mighty army of liberty-loving American freemen who will voluntarily carry this stupendous work into execution, and leave to their children the proud boast, "We, too, had a share in building the great water works of the metropolis."

The world wonders of antiquity rose aloft to heaven, and men of to-day boast, with good reason, of cloud-piercing spires and of towering bridges which span mighty streams; but the work we begin on this auspicious occasion will struggle no less with the depths of the earth. Only a short distance from where we stand, a huge tunnel will carry six hundred million gallons of water daily, to a depth of more than six hundred feet, deeper than the Pyramids are high, and then harnessing the giant powers of nature to this enormous mass of water, will raise it, as the boy toys with the ball, and send it rejoicing on its way to the metropolis. Our aqueduct will have at least three immense underground bridges from bank to bank of the North and East Rivers, and under Long Island Sound, thus making three more strong links in the municipal chain between Manhattan and Brooklyn, between Brooklyn and Richmond. The men who will accomplish these wonders do not impress us as giants of material force, but as giants of the mind, men who harness nature's gigantic energies to the service of mankind and make gravity man's handmaid, and the untamed forces of the cloud and the thunderbolt his assistants.

The Board of Water Supply have called to their aid skilled specialists in every branch of approved modern science. They have asked the

Board of Water Supply of The City of New York

surveyor and the geometrician to determine grades and directions; they have summoned geologists to guard against hidden dangers that lurk in the bowels of the earth; they have bidden the chemist that he might banish from construction all the concealed agents of death and disaster, and they have directed the engineer, the mechanic, and the ironworker, whatever his specialty, to examine every problem and to foresee every possibility. Having thus consulted the Oracle of Modern Science, having determined the route and the chosen methods, when, in a few years, this intricate water project will have become a fact, it is certain to stand as a colossal monument to the achievements of modern science and intellect.

But we must not forget that behind the gigantic material force here to be employed, behind the dazzling power of intelligence here to be displayed, the true and animating cause of all this magnificent creation is that which is most human—its patriotic and beneficent purpose, its lofty ambition to serve mankind, its definite aim to make secure the health and prosperity of those who dwell in our great city.

Indeed, if we study the origin and the conduct of this mighty project, who can fail to see that it is a genuine offspring of the American system of government, that the sermon to be read in these stones will declare in truth that this is a creation of government by the people for the people.

By act of the Legislature a Board of Water Supply was created, with authority to call upon the people of the City of New York to appropriate the sum necessary to obtain an abundant supply of pure and wholesome water to meet the prospective needs of the rapidly growing multiple city at the mouth of the Hudson river. The taxes to be levied, as was foretold, will aggregate at least one hundred and sixty-one millions of dollars. Though the burden imposed was immense, though the sums involved would have bewildered the imagination of our forefathers, yet not a word of protest, not a word of criticism, was heard from the intelligent citizens who recognized the need for this important undertaking.

Why is it that the great American Republic offers this astonishing spectacle? Why is it that we may proudly point to eighty millions of American freemen loyally obedient to the laws of their country? Why do four millions of Americans, who compose the greatest municipality of

Board of Water Supply of The City of New York

the New World, contribute, without a murmur, all the treasure required for this gigantic enterprise? The answer comes spontaneously to our lips. It has been demanded and ordered by the people for the people. The members of the Legislature, through whose act this work is coming into being, are simply the representatives of the people, and their law has expressed the known will of the people. It embodies the demands of the municipal government of New York, headed by its Mayor. It was the legislative response to numerous petitions setting forth the wishes of the foremost citizens of New York. It was the reply to a general demand of all the inhabitants as voiced in the powerful metropolitan press. Essentially, therefore, it was the law of the people; the people received it with acclaim, and the people obeyed the law with alacrity.

And thus again the monumental structures whose building we celebrate to-day repeat the old, old lesson, "Vox populi, Vox Dei." Let our legislators listen and obey the voice of the people. Let them not exhaust their ingenuity in making laws suggested by selfishness and corruption, by the itching palm, by the greedy corporation, by the unscrupulous millionaire, by the monopolistic trust, or by the never-sated politician.

Surely it must be conceded that those intrusted with the construction of this new water-supply system, as honest servants of the people, have certainly acted with both diligence and expedition. The law, as passed, was signed by the Governor on the third day of June, 1905. On the ninth day of the same month the Mayor appointed the Commission. Two months after, the Commissioners, having made a careful examination of all possible routes, and having consulted the most distinguished and competent engineers the country could afford, finally decided that the Catskill plan was the most feasible. On October 9, exactly four months after the Board of Water Supply was appointed, they submitted to the Board of Estimate for their approval a report setting forth the complete plan of the undertaking. Forthwith they organized a force of accountants to record the expenditures of the complicated business to be started. Carefully and expeditiously they selected the engineers destined to work out the technical side of the enterprise. With discretion and prudence they recruited well-nigh six hundred men of science, who are to execute the details of the scheme. To-day all this preparatory work is substantially finished. To-day, a little more than two years after the passage of the law, this Commission has matured

the plan to the point of initiating its material execution. The spade lies ready and the first sod will soon be turned. With speed and energy, with intelligence and caution, with honesty and thrift, under the watchful eye of civic wisdom and the fostering care of far-sighted science, the project starts into life a model for all similar undertakings, an example and an inspiration for all public servants who desire to fulfill their public duties faithfully, swiftly, and conscientiously.

Beyond all this, the work we inaugurate to-day serves to illustrate the dominating characteristic of our Republic. The mainspring of public energy in our Commonwealth is the good of the governed. Taken as a whole, the rulers and the ruled are the same. But, especially as individual citizens, it is the duty of each one of us to strive and labor for the welfare of each other and for us all. The great moving power, therefore, should be benevolence, the desire to contribute to the happiness of every man, who as son of a common fatherland is our fellow citizen, and as the child of a common humanity is our brother. As the great Father of us all provides the sunlight and the blue sky, the gentle dew of heaven, and the life-giving offspring of mother earth for all His children, so the true citizen of our Republic, especially in his official capacity, strives ever to secure the interests and the happiness of all his fellow citizens.

After all is said and done, we must confess that the great motive power of the world is neither the steam engine nor the electric machine, not even the all too highly valued power of Mammon. It is the power of love and brotherhood guided by the power of right. It is this which binds together in one mighty nation these eighty millions of free Americans, regardless of where they may have stood the hearthstones of their fathers. It is this which should banish the spirit of caste among the rich and powerful as well as among those less favored by the smiles of fortune. It is this which should prevent the rise of arrogance and improper ambition in the former, and check the spirit of reckless discontent and anarchy in the latter. This is what our Revolutionary patriots fought for on the banks of the Hudson, and this is what all of us are still striving to enjoy.

Our newly planned water works is, therefore, a creation of this sacred spirit of needed public service, of manly brotherhood, of true benevolence. Why do we freely spend these millions? Why do we devote

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our energies to construct this vast and costly system? Not to immortalize the names and fame of its builders, as did the Pharaohs of the Pyramids! Not to make it a vain boast, as did the creator of the Labyrinth! It was conceived not in the spirit of pride, but in the spirit of benevolence. This mighty aqueduct will be fed by the snows of winter and by the showers of summer. It will take away from no man anything that is needful to him, but it will bring the purest and the most healthful of all drinks to myriads of our fellow citizens both in the present and the future. It will bring to their homes the means of cleanliness and happiness. It will lay the dust of the great city when it becomes a menace to health. It will be a safeguard to the household goods of the poor and to the merchandise of the captains of industry, and when fire threatens to lay in ashes and ruins our dwellings, our storehouses, and our property of every kind, the water from the four great watersheds, the Esopus, the Schoharie, the Rondout, and the Catskill, will restrain the destructive flames and quench the devouring element. Conceived in the spirit of peace and good will, it will bring comfort and happiness to thousands of families, and diffuse the feeling of safety and protection in the greatest community of the New World.

Let us, therefore, joyfully and confidently begin our labors so pregnant with usefulness and blessings. Let us watch with care and sympathy the work as it progresses, and when the day comes that will see its completion, let us turn with pride and pleasure to this memorable day which saw its simple beginnings. Let us cherish the spirit of universal benevolence which is its mother; let us foster the spirit of bold, manly effort which must be the means of its achievement. Let us thank the kind Providence which, on the heights of the Storm King and in the valleys of the Catskills, dispenses the precious water which, after bringing fertility to the farmer, will carry blessings without number to the great mass of humanity that work for themselves, for one another, for their fellow citizens, and for their beloved country in the metropolitan city that is the commercial heart of our Commonwealth.

God speed our work, and may generation after generation, for countless ages, bless this day and the men who did this deed.



THOMAS HASSETT, Secretary. J. WALDO SMITH, Chief Engineer.
WILLIAM H. BURR, JOHN R. FREEMAN, FREDERIC P. STEARNS, Consulting Engineers.

PRESENTATION OF SPADE BY
CHARLES N. CHADWICK

Commissioner of the Board of Water Supply

to

GEORGE B. McCLELLAN,
Mayor of The City of New York

MR. MAYOR:

Every great work which is the result of human effort passes through a period of agitation and discussion before crystallizing into action.

When the hour comes, History tells us that the man never fails.

The great question of to-day is the solution of the municipal problem, to be accomplished along business and engineering lines. Its greatest factor is securing a supply of pure and wholesome water. When in this matter the preliminary investigation was finished and the time came to reduce knowledge and wisdom to practice, you, Sir, were the man and you were ready. You understood the problem and made it a business proposition.

In consideration of this fact, and in recognition of your office as Mayor of The City of New York, it is my privilege, on behalf of the Commissioners of the Board of Water Supply, to present to you this spade, that you may turn the first sod in the construction of the Catskill Aqueduct.



PRESENTATION OF SPADE BY COMMISSIONER CHADWICK.

ACCEPTANCE OF SPADE

by the Mayor

GEORGE B. McCLELLAN

GENTLEMEN OF THE COMMISSION:

I thank you very sincerely for this beautiful spade, given me in remembrance of the opening of the new Catskill Water Supply System. I shall always keep it and treasure it not only as a reminder of to-day, but especially because of the spirit and the friendship which accompany it.

ADDRESS

delivered by

HON. GEORGE B. McCLELLAN

Mayor of The City of New York

LADIES AND GENTLEMEN:

We have met here for the purpose of beginning the physical work on the new Catskill Water Supply System. Exactly two years ago to-day the organization of the engineering force was completed, and in that remarkably short time, almost the impossible has been accomplished. What has been done in the last twenty-four months has already been told you, but the preliminary work was equally important.

When I took office on January 1, 1904, I found myself confronted with a possible water famine, and with nothing practical done for its avoidance. The imminence of the peril was appreciated by the few who had studied the question, but the public at large did not understand its seriousness, nor was there any public sentiment in favor of its speedy solution. Some preliminary work had been done, and done well, but that was all. My administration found it necessary to do three things before a new water supply system could be actually undertaken. First, it was necessary to provide an additional borrowing capacity to meet the expenses of the undertaking, by means of a constitutional amendment which had passed the Legislature but had not been submitted to the people. Second, it was necessary to enact legislation so as to make the powers of the local authorities certain. And third, and most important, it was necessary to arouse public opinion so that the first two obstacles could be removed. When public opinion was once aroused, the rest was easy. I do not believe that it would have been possible for me to have accomplished anything but for the constant and unswerving loyalty and help of those about me, especially of my office staff, of the present Water Commissioner, of the force of the Corporation Counsel's office, and of the then chief engineer of the Aqueduct Board. Nor could we have aroused public opinion without the help of the public-spirited civic organizations, first and foremost among which was the Manufacturers' Association of Brooklyn, under the insistent, consistent and persistent direction of our Commissioner, Mr. Chadwick.

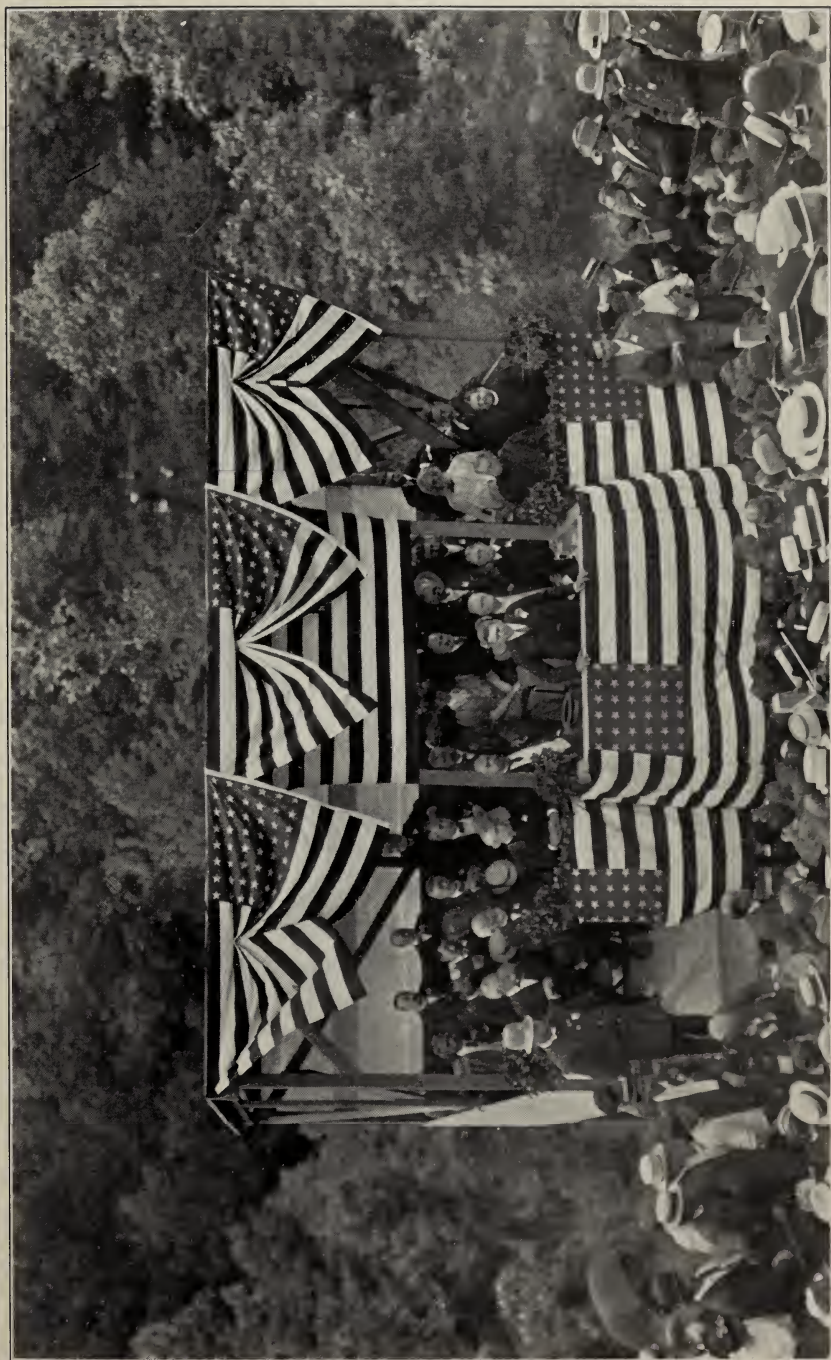
Public spirit aroused, the Constitution amended, and the necessary legislation enacted, I was fortunate enough to obtain the services of the present Commission. As has been told you, because of a pledge I had given, my selection was limited to nine names, submitted by the Chamber of Commerce, the Board of Fire Underwriters, and the Manufacturers' Association. But had my choice been unlimited I could not have done better than I did in obtaining Mr. Simmons, Mr. Shaw and Mr. Chadwick. May they continue to administer their trust earnestly and efficiently, with an eye single to the public welfare. They in their turn have shown great wisdom and have been most successful in their subordinates, in the secretary of the Board, Mr. Hassett, in their consulting engineers, and finally in their chief engineer, Mr. J. Waldo Smith. Mr. Smith has been more closely identified with this work than anyone who has been with me from the beginning. In season and out of season he has stood by me and with me from start to finish. His professional equipment and his executive ability make him the man of all others to direct this vast work, the most important ever undertaken in this country, and one of the most important in the history of the world.

But those who have directed and are directing this great enterprise need no praise nor thanks of mine. What they have accomplished is sufficient proof of their ability and of their devotion to the public service; what they have done and are doing is of itself sufficient reward.

Let me speak for a moment, not about those who lead, but about those who are led; not about those who command, but about the men who are doing the actual physical work; not about the commissioners or the chief engineers, but about the men with the theodolites on their shoulders, the men with the picks and the shovels in their hands, the men who carry the hods.

Statesmen may change the map of the world, but without the men under them, the men who work for them and with them, try as they may they are incapable of changing the surface of the earth.

The course of human events is not permanently altered by the great deeds of history nor by the great men, but by the small daily doings of the little men. It was not the stern and silent commander of Waterloo, but the men who stood unmoved in the unbreakable squares, drawn from the highways and the byways, from the fields and from the towns of England—who revolutionized the history of the world.



MAYOR MCCLELLAN DELIVERING HIS ADDRESS.

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No more pernicious aphorism ever consoled the disappointed or the broken heart than that which declares that "it does not matter, it will be all the same in a hundred years."

It will not be all the same.

Throw a pebble into the Hudson. It makes its little splash, and as the rings grow wider and finally disappear out of sight they disappear out of mind, and yet as they reach the shore they have their direct effect upon the banks and upon the course of that mighty river as it rolls unceasingly to the sea. Every word we utter, every act we do, has its direct bearing on the future of our race. I am one of those who believe that as time goes on the world grows better, and that as man was made in the image of God, so he who believes in the Almighty must have faith in mankind. Every idle thought, every thoughtless deed, spoken or done by the least of us, retards; every word spoken in righteousness, every deed performed with a right good-will, tends toward the progress of humanity. Nations grow powerful and strong, and lead the world, or weak and decadent, and disappear as the human atoms which compose them succeed or fail in doing their duty.

We live in an age of sensationalism. We tend to the worship of success as the only true God, and yet for every man who succeeds in the world's eyes a million fail, and if success in the worldly sense is all that is worth living for, then is the price of life too heavy a price to pay. The praise of the world is fitful and uncertain. A man who is praised to-day, through no fault of his may be condemned to-morrow. A man who was condemned yesterday, equally without reason, may be the popular idol of to-day.

There is a success that far transcends in worth that of being able to raise oneself a little higher than one's fellows, and that is the success of the consciousness of having done one's best, the success which comes from doing one's duty as one finds it, according to the grace and the light and the opportunity that is given one, regardless of what the world may say.

We speak constantly of the pride of profession, but all too little of the pride of trade. In exalting the purely intellectual occupations, we often depreciate the handicrafts. It is true that machinery has largely taken the place of manual labor, and yet, at the last analysis, as much depends

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as ever upon the man who labors with his hands, controlled and guided by an active brain. The glory of the middle ages, its cathedrals, differ from each other not only in accordance with the genius of their architects, but even more in accordance with the spirit of their artisans. How many of you who have wondered whose was the brain that designed the cathedral at Reims, or Amiens, have given a thought to the men who worked under him? Yet so much depended upon them, and if what they wrought is beautiful, it is that they labored not only because they had to, but that their hearts were in their work; and so even with the humblest the artisan became the artist.

If this great work of ours is to accomplish the purpose for which it is intended, it can only succeed because the men in the ranks have done their duty for duty's sake, have done their best because it is their best.

As the years merge in the decades, and the decades in the centuries; when Time has thrown his kindly veil over the bickerings and the differences and the quarrels which seem so much to us and are, after all, so futile and so petty; when friend and enemy, traducer and traduced, hero and admirer, have passed away; when you and I, and all of us who are sitting here now have gone to our long rest, and our very names shall have been forgotten; when this great work, conceived in honesty, begun in honesty, and, God willing, completed in honesty, shall be ministering to the health and the happiness of millions yet to come, then God grant that those who shall see it in the distant years may say—it does not matter how they were called who did this thing, or who they were, or what they were; it is enough to know that they did their duty.

Benediction Prayer.

VICAR-GENERAL M. J. LAVELLE.



Father of Mercies, from whom all blessings flow, look down with gracious eye upon this work begun to-day in Thy Holy Name! Grant that the construction of this aqueduct may be free from accident, scandal and greed! May its pure waters promote health, cleanliness and that beautiful virtue of temperance, which lies so close to the roots of all true prosperity, physical and spiritual! Bless the officials of our City who conceived and authorized the work, the architects who designed, the Commissioners, the engineers and the workmen who will bring it to successful completion! And even as Thou had granted us the grace to undertake the largest work that has ever been planned to satisfy mankind's greatest need, vouchsafe to us, also, the grace of the deepest love of our fellow man and the greatest nobility in promoting Thy sacred honor and glory. Through Jesus Christ, our Lord. In the name of the Father, and of the Son, and of the Holy Ghost. Amen.



Extract from the minutes of the meeting
of the Board of Water Supply of
The City of New York held
on June 26, 1907.

The Commissioners of the Board of Water Supply desire to congratulate the entire organization, both administrative and engineering, upon the successful carrying out of the plans for the Opening Exercises of the Catskill Aqueduct, at Indian brook, on Thursday, June 20, 1907, and to express their grateful appreciation of the efforts of the entire force, which contributed so largely to the success of the ceremonies. The willingness of everyone to assist, in spite of the fact that many could not be present at the ceremonies, emphasizes the fine spirit of self-sacrifice which has characterized the entire organization since its inception and makes it possible to accomplish the results of which the Commissioners are justly proud, and they consider it an honor to be associated with such a body. In recognition of this, it is

RESOLVED, That the above minute be spread upon the records of the Board of Water Supply and a copy be sent to each member of the entire organization.

J. EDWARD SIMMONS
CHARLES N. CHADWICK
CHARLES A. SHAW

Commissioners.

Attest :

THOMAS HASSETT,
Secretary.

